

REMARKS

Claims 1, 7-40 and 55-62 will be pending upon entry of this Amendment. This Amendment cancels claims 2-6 and 47-54; amends claims 1, 7, 8, 12, 23-26, 33; and adds claims 55-62.

Drawings

The Office Action requires new corrected drawings. Accordingly, Replacement Sheets for all Figs. Of the drawings in compliance with 37 CFR 1.121(d) are concurrently submitted herewith.

Claim Objections

Claim 33 has been amended by this Amendment to correct the antecedent basis problem identified in the Office Action.

Claim Rejections – 35 USC § 102

The Office Action rejects pending claim 1 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Number 6,975,098 (“Vinciarelli”). Claim 1 has been amended to more clearly distinguish the present invention from Vinciarelli.

A. The Disclosures of Vinciarelli

The most relevant and representative disclosures of Vinciarelli will now be discussed.

At Fig. 2A, Vinciarelli discloses circuitry including a plurality of subassembly PCBs 28a through 28n. These PCBs are not “package housings.” As is well known in the art of electronics, PCB stands for printed circuit board, and a PCB is a substrate used to secure multiple package housing. In other words, a PCB generally holds many separate package housings, but is not itself a package housing. Furthermore, Figs. 4A to 4C of Vinciarelli show that its PCBs are not themselves package housings, but rather used as substrates to hold and electrically connect a plurality of package housings. Each PCB 28a to 28n of Vinciarelli includes two or three DC-DC converters. These DC-DC converters 30a through 30i. Vinciarelli is not clear and explicit about

whether these DC-DC converters 30a to 30i are each contained in a single package housing. However, Figs. 4A to 4C of Vinciarelli, and the associated discussion of DC-DC converter 102 and VTM 108, do suggest that each DC-DC converter is indeed respectively contained within a single package housing. However, even assuming that DC-DC converters 30a to 30i, or at least their associated power conversion switches, are each contained within a single package housing, it is noted that each DC-DC converter has but a single power output. Therefore, even assuming that the DC-DC converters 30a to 30i are each contained in a single package housing, Fig. 2A of Vinciarelli does not disclose a single package housing with multiple DC-DC converters.

Figs. 6 and 7 of Vinciarelli are similar to Fig. 2A in that each DC-DC converter, or VTM, is in a separate package housing, and each DC-DC converter, or VTM has only a single power output. In its Fig. 2A, Fig. 6 and Fig. 7 embodiments, Vinciarelli does not integrate the power conversion switches for a plurality of DC-DC converters into a single package housing.

Figs. 8A to 8C of Vinciarelli disclose a multiple output regulator 62 that includes a plurality of power converters. However, the circuitry of the multiple output regulator 62 is not disclosed to be contained within a single package housing. In fact, the discussion of the multiple output regulator 62 at column 14, line 42 to column 15, line 10, suggests that the multiple output regulator is distributed and not integrated.

Fig. 9 of Vinciarelli discloses a “first SAC topology.” (See Vinciarelli at column 16, line 66). This topology has only a single power input and a single power output. Furthermore, the first SAC topology 90 is not disclosed to be contained within a single package housing. Also, the switches 58 and 60 of this topology are not disclosed to be contained in the same package housing.

B. Claim 1 and Its Dependent Claims

Claim 1 sets forth a system that has been amended to recite “wherein all power conversion switches required for respectively converting the first power input signal into the first through fifth power output signals are located within the package housing.” (emphasis added) This is not taught or suggested by Vinciarelli. As explained above, while Vinciarelli discloses circuitry including a plurality of power converters, each power converter has its own package housing.

Vinciarelli does not disclose that two power outputs come out of the same package housing, much less the five power outputs recited in the above-quoted language of claim 1 (as amended). For this reason, claims 1 and 7-40 are patentable over Vinciarelli.

Claim Rejections – 35 USC § 103

The Office Action contains obviousness rejections which will now be discussed.

A. Rejection Based On Vinciarelli (By Itself)

The Office Action rejects pending claims 7, 9-22 and 25-27 under 35 U.S.C. 103(a) as being unpatentable over Vinciarelli. Also, canceled claims 2-6, which were also rejected on these grounds, have been incorporated into amended claim 1, at least to some extent. It is respectfully submitted that claims 1, 7, 9-22 and 25-27 are patentable over Vinciarelli for the reasons discussed above in connection with their base claim, claim 1. Specifically, Vinciarelli does not teach or otherwise suggest that power conversion switches for multiple power converters may be located within a single package housing. The single power output per package housing correlation disclosed in Vinciarelli (see Vinciarelli at Figs. 4A to 4C and associated discussion), instead teach away from the idea that switches for multiple converters may be integrated into a single package housing as recited in the above-quoted portion of claim 1.

B. Rejection Based On Vinciarelli and Kim

The Office Action rejects pending claims 8 and 37-40 under 35 U.S.C. 103(a) as being unpatentable over Vinciarelli in view of U.S. patent 5,955,797 (“Kim”). Like Vinciarelli, Kim fails to disclose a single package housing including the switches for a plurality of switching power converters as recited in the above-quoted portion of claim 1 (that is, the base claim of claims 8 and 37-40). For this reason, it is respectfully submitted that claims 8 and 37-40 are patentable over the applied combination of references.

C. Rejection Based On Vinciarelli and Wright

The Office Action rejects pending claims 28-36 under 35 U.S.C. 103(a) as being unpatentable over Vinciarelli in view of U.S. patent 6,541,879 (“Wright”). Like Vinciarelli and Kim, Wright fails to disclose a single package housing including the switches for a plurality of switching power converters as recited in the above-quoted portion of claim 1 (that is, the base claim of claims 28-36). For this reason, it is respectfully submitted that claims 28-36 are patentable over the applied combination of references.

D. Rejection Based On Vinciarelli and Klughart

The Office Action rejects pending claims 23-24 under 35 U.S.C. 103(a) as being unpatentable over Vinciarelli in view of U.S. patent 6,975,098 (“Klughart”). Like Vinciarelli, Kim and Wright, Klughart fails to disclose a single package housing including the switches for a plurality of switching power converters as recited in the above-quoted portion of claim 1 (that is, the base claim of claims 23-24). For this reason, it is respectfully submitted that claims 23-24 are patentable over the applied combination of references.

Newly-Added Claims

Support for newly-added claims 55-62 will now be set forth in the following table.

Claim(s)	Exemplary Support In The Specification As Filed
55	Fig. 2 at ref numerals 110, 140, 141, 138
56	Fig. 2 at reference numeral 142
57	Fig. 2 at reference numeral 143, 144
58	Fig. 2 at ref numerals 112, 114, 116
59	Fig. 2 at reference numeral 142, 143, 144
60	Fig. 2 at reference numerals 11, 112, 114, 116, 140, 141, 142, 120, 138
61	Claim 6 (as filed)
62	Page 11, lines 29-30

Claim 55 sets forth a system that recites “all power conversion switches required for respectively converting the first and second power input signals into the first and second power

output signals are located within the package housing.” This is not taught or suggested in any of the applied prior art mentioned in the Office Action. For this at least reason, claims 55-59 are patentable over this applied art.

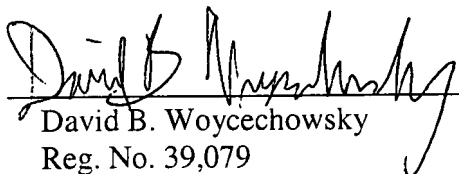
Claim 60 sets forth a module that recites an AC adapter input circuitry, a first battery input circuitry, a second battery input circuitry, a first switching power converter, a second switching power converter, a third switching power converter, a power converter switch controller, an input power controller, a power distribution controller all integrated into the form of a single module. This is not taught or suggested in any of the applied prior art mentioned in the Office Action. For this at least reason, claims 60-62 are patentable over this applied art.

Conclusion

It is submitted that the foregoing amendments and/or explanations are sufficient to form a complete response to the Office Action and that the claims are now in condition for allowance.

Respectfully requested,

ELECTROVAYA Inc.

By: 
David B. Woycechowsky
Reg. No. 39,079

David B. Woycechowsky
ELECTROVAYA Inc.
2645 Royal Windsor Drive
Mississauga, Ontario L5J 1K9 Canada
Tel. (905) 855-4610 ext 3000
Fax: (905) 822-7953